

WHAT IS CLAIMED IS:

1. A method to prepare purified isopropyl chloride from a starting material containing isopropyl chloride and impurities that are relatively easy to oxidize compared to isopropyl chloride, which comprises the steps of:
  - a) reaction of a chlorinating agent with the starting material to produce a mixture containing isopropyl chloride and chlorinated impurities,
  - b) distillation to separate isopropyl chloride from the chlorinated impurities.
2. The method of claim 1, wherein the impurities that are relatively easy to oxidize compared to isopropyl chloride are primarily olefins.
3. The method of claim 1, wherein a catalyst is employed to improve the chlorination kinetics.
4. The method of claim 3, wherein the catalyst is selected from the group consisting of light, ferric chloride and other transition metal chlorides, aluminum chlorides, antimony chlorides, stannic chloride, zinc chloride, lewis acids, bismuth chloride, gallium chloride, boron chloride, activated carbon, alumina and silica.
5. The method of claim 1, wherein the chlorination step is carried out in the liquid phase.
6. The method of claim 1, wherein the chlorination step is carried out in the vapor phase.
7. The method of claim 1, wherein excess chlorine in the range of 1%-35% is added to the starting material.

8. The method of claim 7, wherein the excess chlorine is added in a preferred range of 5%-15%.
9. The method of claim 1, wherein the reaction temperature is between 0°C and 60°C.
10. The method of claim 9, wherein the preferred reaction temperature is between 10°C and 30°C.
11. The method of claim 1, wherein the distillation is performed in two towers, in the first tower, hydrogen chloride is separated from isopropyl chloride, in the second tower, isopropyl chloride is separated from heavier chlorinated hydrocarbons.
12. The method of claim 1, wherein the chlorination and distillation are performed in a single vessel.
13. The method of claim 12, wherein the starting material and the chlorinating agent are added to the single vessel near the bottom of the single vessel.
14. The method of claim 12, wherein the distillation has an operating pressure of 0-50 psig.
15. The method of claim 12, wherein the distillation is conducted with the vessel having a bottom temperature below 160°C.
16. The method of claim 12, wherein the starting material and chlorinating agent are premixed before being introduced near the bottom of the single vessel.
17. Isopropyl chloride having a purity of approximately 99.5% prepared by the method of claim 1.

18. A method to prepare purified isopropyl chloride from a starting material containing isopropyl chloride and impurities that are relatively easy to oxidize compared to isopropyl chloride, which comprises the steps of:

- a) distillation of the starting material to produce a fraction enriched in isopropyl chloride,
- b) reaction of a chlorinating agent with the enriched fraction to produce a mixture containing isopropyl chloride and chlorinated impurities,
- c) distillation of the mixture from step b) to separate purified isopropyl chloride from the chlorinated impurities.

19. The method of claim 18, wherein the impurities that are relatively easy to oxidize compared to isopropyl chloride are primarily olefins.

20. The method of claim 18, wherein a catalyst is employed to improve the chlorination kinetics.

21. The method of claim 20, wherein the catalyst is selected from the group consisting of light, ferric chloride and other transition metal chlorides, aluminum chlorides, antimony chlorides, stannic chloride, zinc chloride, lewis acids, bismuth chloride, gallium chloride, boron chloride, activated carbon, alumina and silica.

22. The method of claim 18, wherein the chlorination step is carried out in the liquid phase.

23. The method of claim 18, wherein the chlorination step is carried out in the vapor phase.

24. the method of claim 18, wherein the distillation of the starting material is conducted at an operating pressure of 0-50 psig.

25. The method of claim 24, wherein a preferred operating pressure is 10-15 psig.

26. The method of claim 18, wherein the distillation of the starting material has a bottom temperature less than 160°C

27. The method of claim 18, wherein the reaction is maintained of approximately 38°C.

28. A method to prepare purified isopropyl chloride from a starting material containing isopropyl chloride and impurities that are relatively easy to oxidize compared to isopropyl chloride, which comprises the steps of:

a) reaction of a chlorinating agent with the starting material to produce a mixture containing isopropyl chloride and chlorinated impurities,

b) treatment of the product mixture from step a) to produce a treated mixture containing reduced chlorine concentration,

c) distillation of the treated product mixture from step b) to separate purified isopropyl chloride from the chlorinated impurities.

29. The method of claim 28, wherein the impurities that are relatively easy to oxidize compared to isopropyl chloride are primarily olefins.

30. The method of claim 28, wherein the product mixture is treated with a substance selected from the group consisting of a metal sulfite, sulfur dioxide, a "per" compound and an easily separated olefin.

31. The method of claim 26, wherein a catalyst is employed to improve the chlorination kinetics.
32. The method of claim 29, wherein the catalyst is selected from the group consisting of light, ferric chloride and other transition metal chlorides, aluminum chlorides, antimony chlorides, stannic chloride, zinc chloride, lewis acids, bismuth chloride, gallium chloride, boron chloride, activated carbon, alumina and silica.
33. The method of claim 28, wherein the chlorination step is carried out in the liquid phase.
34. The method of claim 28, wherein the chlorination step is carried out in the vapor phase.
35. A method to prepare purified isopropyl chloride from a starting material containing isopropyl chloride and impurities that are relatively easy to oxidize compared to isopropyl chloride, which comprises:
- a) distillation of the starting material to produce a fraction enriched in isopropyl chloride,
  - b) reaction of a chlorinating agent with the enriched fraction to produce a mixture containing isopropyl chloride and chlorinated impurities,
  - c) treatment of the product mixture from step b) to produce a mixture containing reduced chlorine concentration,
  - d) distillation of the treated mixture from step c) to separate purified isopropyl chloride from the chlorinated impurities.

36. The method of claim 35, wherein the impurities that are relatively easy to oxidize compared to isopropyl chloride are primarily olefins.
37. The method of claim 35, wherein a catalyst is employed to improve the chlorination kinetics.
38. The method of claim 37, wherein the catalyst is selected from the group consisting of light, ferric chloride and other transition metal chlorides, aluminum chlorides, antimony chlorides, stannic chloride, zinc chloride, lewis acids, bismuth chloride, gallium chloride, boron chloride, activated carbon, alumina and silica.
39. The method of claim 35, wherein the chlorination step is carried out in the liquid phase.
40. the method of claim 35, wherein the chlorination step is carried out in the vapor phase.